SPECTRUM-ADAPTIVE NETWORKING

ABSTRACT OF THE DISCLOSURE

The present invention increases the available spectrum in a wireless network by sharing existing allocated (and in-use) portions of the RF spectrum in a manner that will minimize the probability of interfering with existing legacy users. The invention provides interference temperature-adaptive waveforms, and a variety of physical and media access control protocols for generating waveforms based on measurement and characterization of the local spectrum. The invention measures the local spectrum at a receiving node, generates an optimal waveform profile specifying transmission parameters that will water-fill unused spectrum up to an interference limit without causing harmful interference to primary and legacy transmitters using the same frequency bands, and enables simultaneous transmit and receive modes at a multiplicity of transceivers in a wireless network. The invention also provides closed loop feedback control between nodes, co-site interference management, intersymbol interference mitigation, wide sense stationary baseband signaling and modulation, and power limited signaling for avoiding detection and interception.